

IN THE CLAIMS

Please delete Claims 1-14 in the present application and insert therefor the following claims:

-- 15. A method for real time virtual positioning of a sound source in three dimensional space as perceived during playback, comprising the steps of:

binauralizing a non-binauralized input sound signal having one or more channels to provide a left output signal and a right output signal; and

5 playing the left and right output signals through respective left and right loudspeakers of a localized speaker headset. --

-- 16. The method of Claim 15, wherein the step of binauralizing comprises the steps of:

processing the non-binauralized input sound signal to provide a plurality of sound signals corresponding to virtual locations disposed in an azimuthal plane with respect to a listening position;

repositioning select ones of the virtual locations to apparent positions above and below the azimuthal plane; and

mixing the plurality of sound signals including repositioned select ones of the virtual locations, to provide the left output signal and the right output signal. --

--17. The method of Claim 16, wherein the step of processing the non-binauralized input sound signal comprises the steps of:

selecting portions of each channel of the non-binauralized input sound signal;

5 blending the selected portions according to a predetermined mixing plan to generate a composite sound signal; and

coupling the composite signal to an external loudspeaker.--

-- 18. The method of Claim 15, wherein the step of playing comprises the steps of:

supporting the left and right loudspeakers proximately in the plane of the zygomatic arch of the listener in rearward facing relationship with respect to the listener's head for radiating sound toward the pinna of the listener's respective left and right ears; and

coupling the left and right output signals to corresponding left and right signal inputs of the localized speaker headset.--

-- 19. The method of Claim 18, wherein the step of supporting comprises the step of:

locating the left and right loudspeakers proximate and not in contact with the respective left and right ears of the listener so as to avoid disturbing the conch resonance of the listener's ears.--

-- 20. The method of Claim 18, wherein the step of supporting comprises the step of:

locating the left and right loudspeakers proximate and not in contact with the respective left and right ears of the listener such that the natural left-right and right-left separation of signals by the listener's head is maintained.--

-- 21. The method of Claim 15, comprising the step of:

associating a video image with the non-binauralized input sound signal.--

-- 22. The method of Claim 21, wherein the step of associating a video image comprises the steps of:

associating an external loudspeaker with the video image;

positioning the external loudspeaker proximate the video image and facing in the same direction as a line of sight from the central portion of the video image

to the listener; and

reproducing a portion of the non-binauralized input sound signal in the external loudspeaker.--

--23. The method of Claim 22, wherein the step of reproducing comprises the steps of:

selecting portions of each channel of the non-binauralized input sound signal;

blending the selected portions according to a predetermined mixing plan to generate a composite sound signal; and

coupling the composite sound signal to the external loudspeaker.--

-- 24. The method of Claim 22, wherein the portion of the non-binauralized input sound signal reproduced by the external loudspeaker comprises voice sounds.--

-- 25. The method of Claim 22, wherein the portion of the non-binauralized input sound signal reproduced by the external loudspeaker comprises a select portion of the audible frequency spectrum of the non-binauralized input sound signal.--

-- 26. The method of Claim 25, wherein the select portion of the audible frequency spectrum of the non-binauralized input sound signal includes low frequency tones.--

-- 27. The method of Claim 15, wherein the non-binauralized input sound signal is a monaural sound signal.--

-- 28. The method of Claim 15, wherein the non-binauralized input sound signal is a stereo sound signal.--

-- 29. The method of Claim 15, wherein the non-binauralized input sound signal is a surround sound signal.--

-- 30. The method of Claim 15, wherein the input sound signal is a binaural sound signal.--

-- 31. The method of Claim 16, wherein the step of processing comprises the step of:

changing attributes of the signals representing the non-binauralized input sound signals, the attributes selected from the group including intensity, phase and signal delay with respect to the corresponding original non-binauralized input sound signal and/or with respect to another non-binauralized input sound signal.--

-- 32. The method of Claim 16, wherein the perceived virtual locations of the sound signals do not vary with movement of the listener or of the listener's head in the azimuthal plane at the listening location.--

-- 33. A method for real time virtual positioning of a sound signal in three dimensional space as perceived during playback, comprising the steps of:

inputting a stereo audio signal from a video program prerecorded to include surround sound audio;

5 decoding the surround sound audio to provide a plurality of surround sound signals;

binauralizing the plurality of surround sound signals to provide a left output signal and a right output signal; and

10 playing the left and right output signals through respective left and right localized loudspeakers.--

-- 34. The method of Claim 33, wherein the step of binauralizing comprises the steps of:

processing the plurality of surround sound signals to position them as virtual locations disposed in an azimuthal plane with respect to a listening position;

5 repositioning select ones of the virtual locations to apparent positions above and below the azimuthal plane; and

mixing the plurality of sound signals representing virtual locations including repositioned select ones of the virtual locations to provide the left output signal and the right output signal.--

--35. The method of Claim 34, wherein the step of processing said plurality of surround sound signals comprises the steps of:

selecting portions of each channel of the surround sound signal;

5 blending the selected portions according to a predetermined mixing plan to generate a composite sound signal; and

coupling the composite signal to an external loudspeaker.--

-- 36. The method of Claim 33, wherein the step of playing comprises the steps of:

5 supporting the left and right localized loudspeakers proximately in the plane of the zygomatic arch of the listener in rearward facing relationship with respect to the listener's head for radiating sound toward the pinna of the listener's respective left and right ears; and

coupling the left and right output signals to corresponding left and right signal inputs of the left and right localized loudspeakers.--

-- 37. The method of Claim 36, wherein the step of supporting comprises the step of:

locating the left and right localized loudspeakers proximate and not in

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5 contact with the respective left and right ears of the listener so as to avoid disturbing the  
conch resonance of the listener's ears.--

-- 38. The method of Claim 36, wherein the step of supporting comprises the  
step of:

85 5 locating the left and right localized loudspeakers proximate and not in  
contact with the respective left and right ears of the listener such that the natural left-  
right and right-left separation of signals by the listener's head is maintained.--

-- 39. The method of Claim 33, comprising the step of:  
associating the video program image with the stereo audio signal.--

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5 -- 40. The method of Claim 39 comprising the steps of:  
associating an external loudspeaker with the video image;  
positioning the external loudspeaker proximate the video image and  
facing in the same direction as a line of sight from the central portion of the video image  
to the listener; and  
reproducing a portion of the stereo audio signal in the external  
loudspeaker. --

--41. The method of Claim 40, wherein the step of reproducing comprises the  
steps of:

5 selecting portions of each channel of the stereo audio signal;  
blending the selected portions according to a predetermined mixing plan  
to generate a composite sound signal; and  
coupling the composite sound signal to the external loudspeaker.--

-- 42. The method of Claim 40, wherein the portion of the stereo audio signal  
reproduced by the external loudspeaker comprises voice sounds.--

-- 43. The method of Claim 40, wherein the portion of the stereo audio signal reproduced by the external loudspeaker comprises a select portion of the audible frequency spectrum of the stereo audio signal.--

-- 44. The method of Claim 43, wherein the select portion of the audible frequency spectrum of the stereo audio signal includes low frequency tones.--

-- 45. The method of Claim 34, wherein the step of processing comprises the step of:

changing attributes of the signals representing the surround sound signals, the attributes selected from the group including intensity, phase and signal delay with respect to the corresponding original signal and/or with respect to another input sound source signal.--

-- 46. The method of Claim 34, wherein the perceived virtual locations of the sound signals do not vary with movement of the listener or of the listener's head in the azimuthal plane at the listening location.--

-- 47. Apparatus for real time virtual positioning of a sound source in three dimensional space as perceived during playback, comprising:

means for binauralizing a non-binauralized input sound signal to provide a left output signal and a right output signal; and

means for playing said left and right output signals through respective left and right loudspeakers of a localized speaker headset. --

-- 48. The apparatus of Claim 47, wherein the means for binauralizing comprises:

means for processing said non-binauralized input sound signal to provide a plurality of sound signals corresponding to virtual locations disposed in an azimuthal

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5 plane with respect to a listening positioning;

means for repositioning select ones of said virtual locations to apparent positions above and below said azimuthal plane; and

means for mixing said plurality of sound signals including repositioned select ones of said virtual locations, to provide said left output signal and said right output signal.--

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--49. The apparatus of Claim 48, wherein said means for processing said non-binauralized input sound signal comprises:

means for selecting portions of each channel of said non-binauralized input sound signal;

means for blending said selected portions according to a predetermined mixing plan to generate a composite sound signal; and

means for coupling said composite signal to an external loudspeaker.--

-- 50. The apparatus of Claim 47, wherein the means for playing comprises:

means for supporting said left and right loudspeakers proximately in the plane of the zygomatic arch of a listener in rearward facing relationship with respect to said listener's head for radiating sound toward the pinna of said listener's respective left and right ears; and

means for coupling said left and right output signals to corresponding left and right signal inputs of said localized speaker headset. --

-- 51. The apparatus of Claim 47, comprising:

means for associating a video image with said non-binauralized input sound signal. --

-- 52. The apparatus of Claim 51, wherein said means for associating a video image comprises:

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- an external loudspeaker for association with said video image;
- means for positioning said external loudspeaker proximate said video  
 5 image and facing in the same direction as a line of sight from the central portion of said  
 video image to said listener; and
- means for reproducing a portion of said non-binauralized input sound  
 signal in said external loudspeaker.

--53. The apparatus of Claim 52, wherein said means for reproducing  
 comprises:

- means for selecting portions of each channel of said non-binauralized  
 input sound signal;
- 5 means for blending said selected portions according to a predetermined  
 mixing plan to generate a composite sound signal; and
- coupling said composite sound signal to said external loudspeaker.--

-- 54. Apparatus for real time virtual positioning of a sound source in three  
 dimensional space as perceived during playback, comprising:

- means for inputting a stereo audio signal from a video program  
 prerecorded to include surround sound audio;
- 5 means for decoding said surround sound audio to provide a plurality of  
 surround sound signals;
- means for binauralizing said plurality of surround sound signals to  
 provide a left output signal and right output signal; and
- means for playing said left and right output signals through respective  
 10 left and right localized loudspeakers. --

-- 55. The apparatus of Claim 54, comprising:

- means for processing said plurality of surround sound signals to position  
 them as virtual locations disposed in an azimuthal plane with respect to a listening

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position;

5 means for repositioning select ones of said virtual locations to apparent positions above and below said azimuthal plane; and

means for mixing said plurality of sound signals representing said virtual locations including repositioned select ones of said virtual locations to provide said left output signal and said right output signal. --

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--56. The apparatus of Claim 55, wherein said means for processing said plurality of surround sound signals comprises:

means for selecting portions of each channel of said surround sound signal;

means for blending said selected portions according to a predetermined mixing plan to generate a composite sound signal; and

means for coupling said composite signal to an external loudspeaker.--

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-- 57. The apparatus of Claim 54, comprising:

means for supporting said left and right localized loudspeakers proximately in the plane of the zygomatic arch of a listener in rearward facing relationship with respect to said listener's head for radiating sound toward the pinna of said listener's respective left and right ears; and

5 means for coupling said left and right output signals to corresponding left and right signal inputs of said left and right localized loudspeakers. --

-- 58. The apparatus of Claim 54, comprising:

means for associating a video image of said video program with said stereo audio signal. --

--59. The apparatus of Claim 58, wherein said means for associating said video image comprises: